

Energy Management at Alamo Colleges



ALAMO
COLLEGES

JOHN W. STRYBOS, P.E., C.E.M.

ASSOCIATE VICE CHANCELLOR
OF FACILITIES

December, 2016



The Achieving the Dream Leader College designation recognizes an institution's impact in the effort to improve student success and eliminate achievement gaps nationwide.

Outline

Introduction: Alamo Colleges

Energy Conservation Projects

- Continuous Commissioning (CC[®])
- Summer Initiatives: Four Day Work Week and Demand Response.
- Thermal storage systems at NLC, NVC and PAC
- Green Initiatives and Emissions Reductions
- Summer Fellows

Conclusion: Benefits to Alamo



ENERGY SYSTEMS LABORATORY
TEXAS A&M ENGINEERING EXPERIMENT STATION



**ALAMO
COLLEGES**

Introduction: Alamo Colleges

San Antonio College (SAC)



1925
2,166,594 ft²
31 Buildings
~ 20,000 students

Northeast Lakeview College (NLC)



2007
369,651 ft²
10 Buildings
~ 3,000 students

Northwest Vista College (NVC)



1995
838,471 ft²
12 Buildings
~ 17,000 students

St. Phillip's College (SPC)



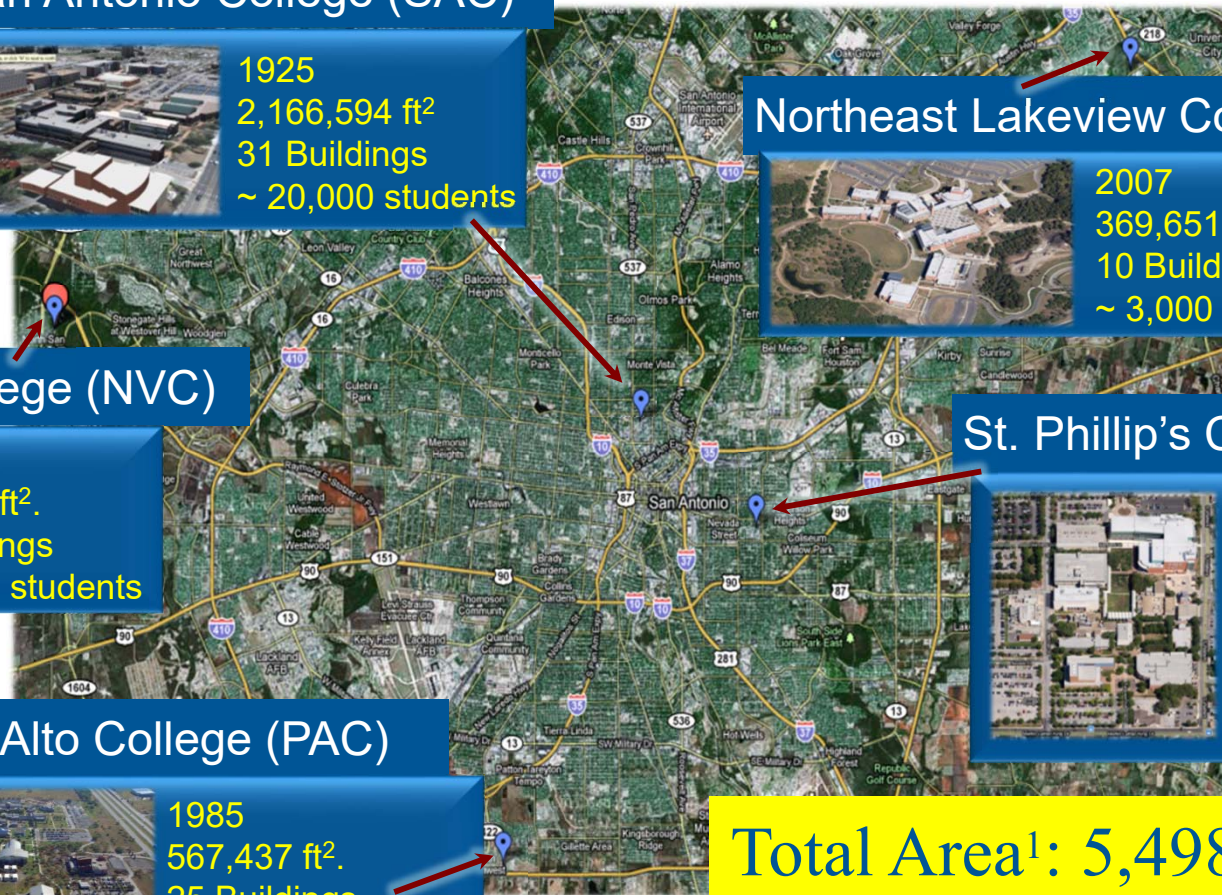
1898
MLK: 781,460 ft²
18 Buildings
SWC: 460,492 ft²
6 Buildings
~ 11,000 students

Palo Alto College (PAC)



1985
567,437 ft²
25 Buildings
~ 9,000 students

Total Area¹: 5,498,597 ft²
More than 50,000 students



1) ACCD Building Inventory 2014. Includes Fire Training Academy and district offices.

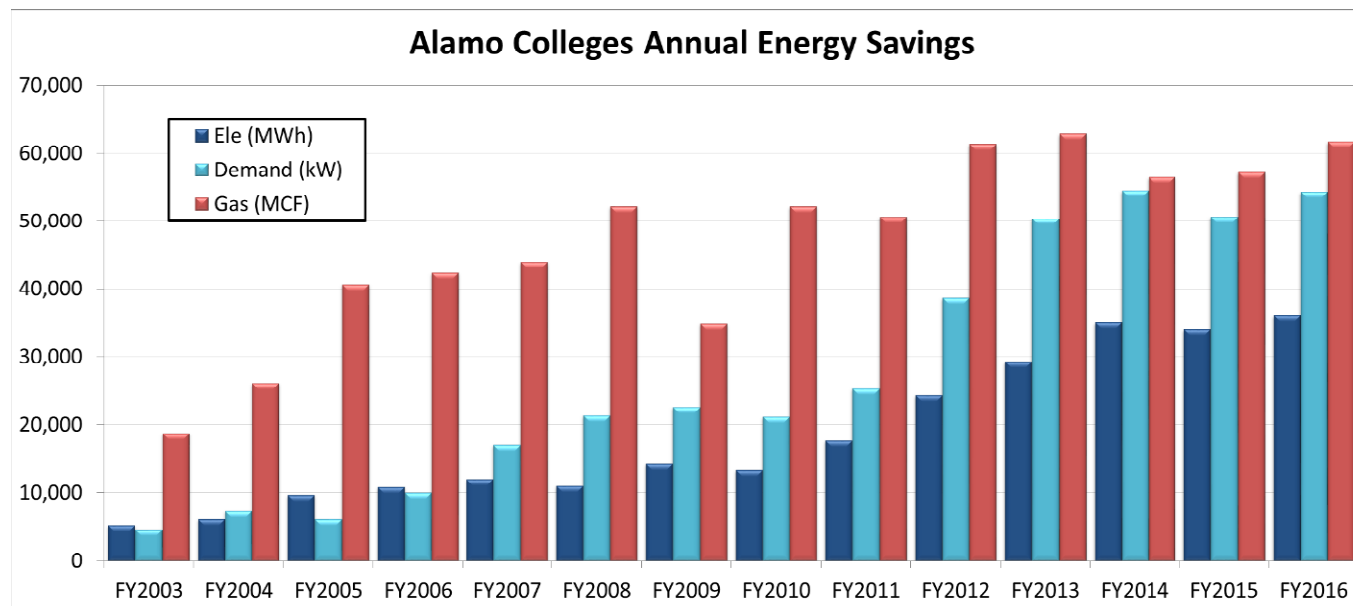
Continuous Commissioning[®] (CC[®])

- A team effort (facility staff & CC[®] professionals) to commission mechanical and control devices and to optimize overall building systems.
- Oriented toward total building performance with emphasis on energy management



CC[®] Measures Implement at Alamo Colleges

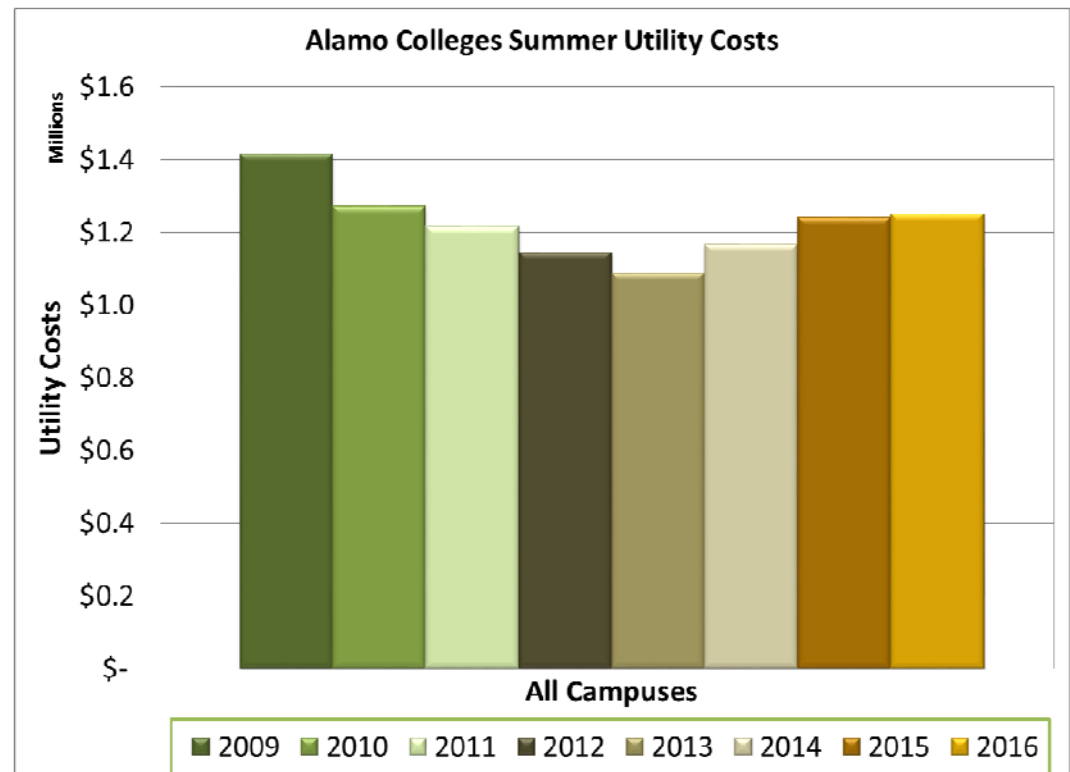
- Air Handler Optimization
 - Occupied/unoccupied schedules
 - Supply air temperature reset schedule
 - Duct static pressure reset schedule
 - Economizer mode
 - Humidity control
- Terminal Box Optimization
 - Minimum flow setting
 - Air flow calibration/verification
- Central Plant Optimization
 - Chilled and hot water reset schedules
 - Chiller staging



Summer Initiatives: Four Day Work Week Schedule

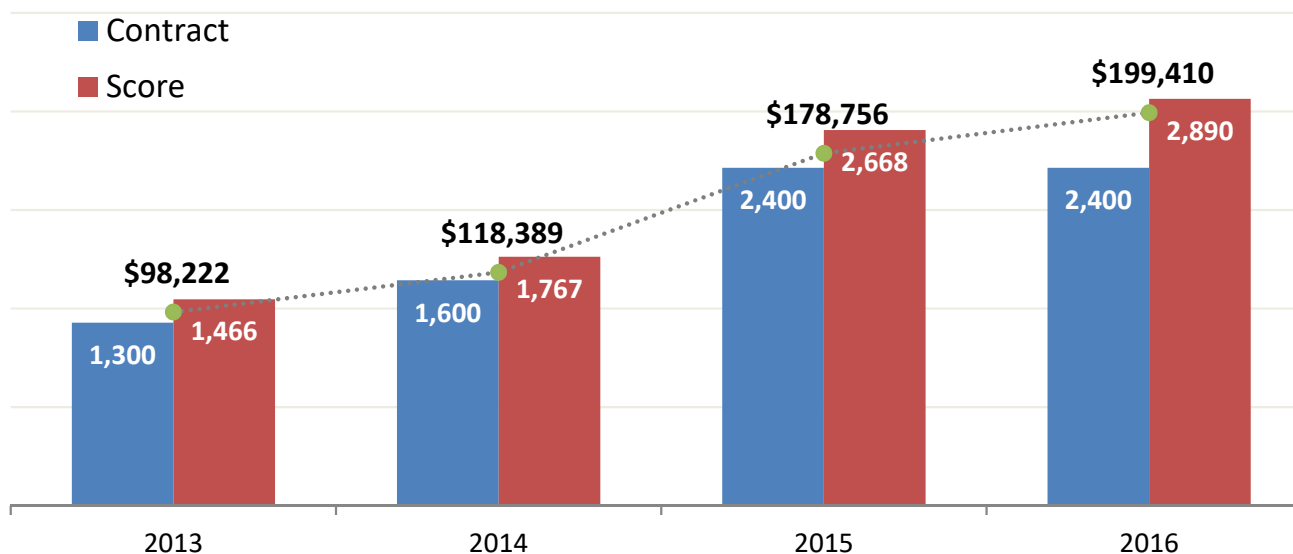
Summer 2016 Total Savings: \$263,294

- CC[®] Measures
- Four day work week schedule



Summer Initiatives: Demand Response Program

Historic Performance and Rebate



Alamo Colleges kW contracted reduction versus actual reduction, and corresponding rebate for 2013, 2014, 2015 and 2016

Chilled Water Thermal Energy Storage (TES) Tanks: Since 2014



Northeast Lakeview College

- 1.0 million gallons
- 70'-0" ID x 34'-9" water depth
- 4,000 gpm



Northwest Vista College

- 0.9 million gallons
- 66'-2" ID x 35'-0" water depth
- 4,000 gpm

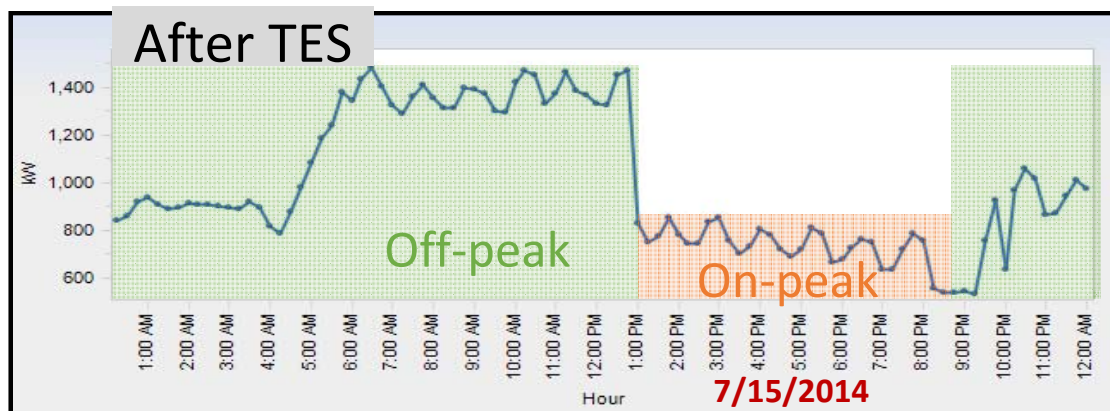
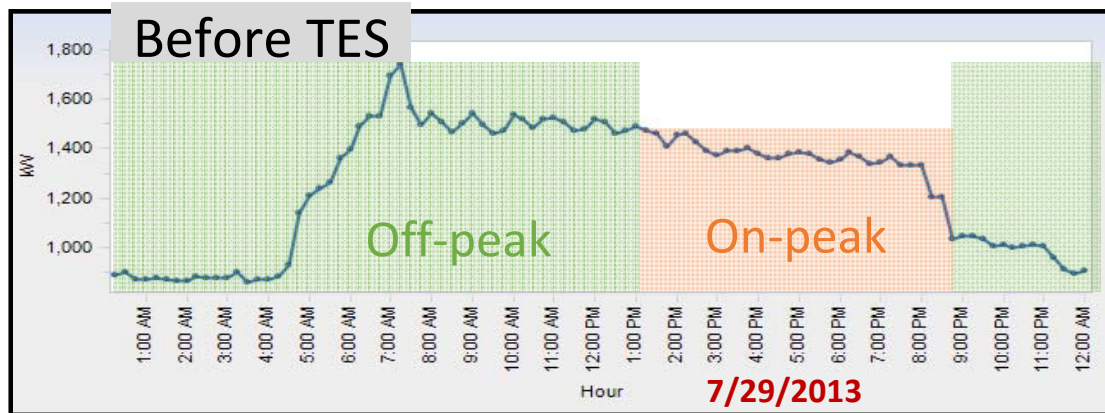


Palo Alto College

- 0.53 million gallons
- 42'-4" ID x 50'-8" water depth
- 2,500 gpm

TES Tanks: Manage Daily Peak Loads

Colleges switched from real-time cooling to drawing from the TES tanks



Expected Savings:

- \$280,000 in annual cost savings
- 1.5 GWh/yr in energy consumption benefits

Green Initiatives and Emissions Reductions from Energy Savings

Green Initiatives

Solar Panels ~600 kW total generation capacity:

- SPC – Southwest Campus: 400 kW
- SAC – Scobee Center: 33.32 kW
- SAC - Eco Centro: 23.80 kW
- NVC – Parking Garage: 154 kW

LEED-Certified Projects:

- Eco Centro
- NVC (Upcoming)

Second Nature's Climate Leadership Commitment

Emissions Reductions

Cumulative Emissions Reductions from Jun-02 to Aug-16				
Source	Reduction	Unit	Tons	Unit
Electricity	259,465	MWh	78.28	NOx
			28.28	SOx
			72,418	CO ₂
Gas	663,340	MCF	34.83	NOx
			29,850	CO ₂

Total CO₂ reduction from electricity and gas - 102,268 tons:

Equivalent to 19,597 passenger vehicles driven a year²

2) EPA Greenhouse Gas Equivalencies Calculator, 2016

Summer Fellows working on Energy Projects

Program

- EDF (Environmental Defense Fund) Climate Corps Fellows
- Alamo Colleges has been paired with a fellow each summer since 2013
- Fellows with Sustainability and Energy Management background

Projects

- Energy audits and lighting retrofit proposals
- Analysis of buildings' energy and water performance
- LEED standard recommendations
- Renewable energy analysis

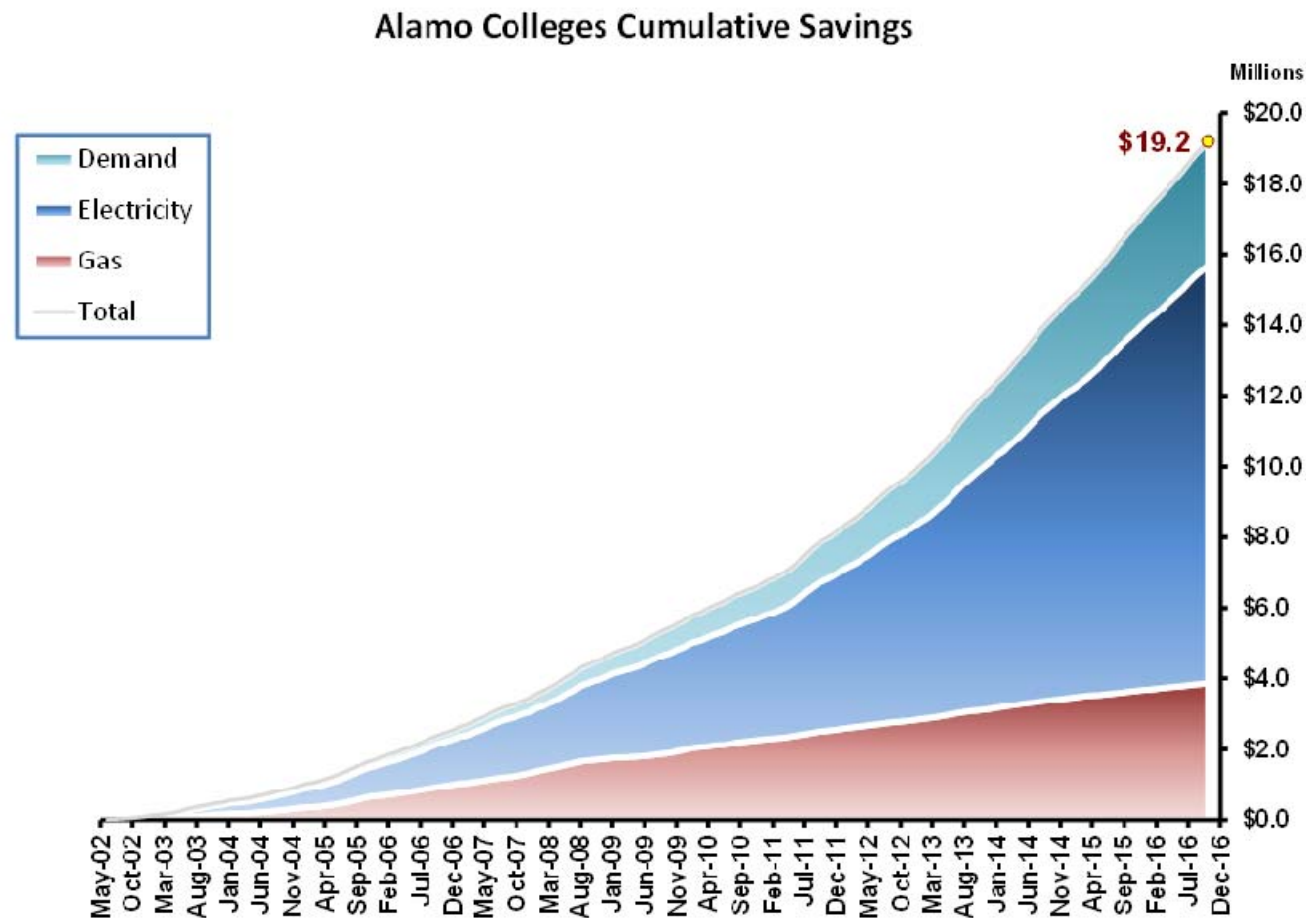


ENERGY SYSTEMS LABORATORY
TEXAS A&M ENGINEERING EXPERIMENT STATION



ALAMO
COLLEGES

Overall Benefits to Alamo Colleges from Energy Management



Cumulative cost savings ~ \$19 Millions

(May 2002 through October 2016)

Includes district wide operation buildings and all campuses.

Contact:

John Strybos

Associate Vice Chancellor of Facilities

Alamo Community College District

jstrybos@alamo.edu

Website:

www.alamo.edu

Thanks.



The Achieving the Dream Leader College designation recognizes an institution's impact in the effort to improve student success and eliminate achievement gaps nationwide.